SOME COMMENTS ON ASKING THE RIGHT QUESTIONS, GETTING THE RIGHT ANSWERS

PEGGY FAIRBAIRN-DUNLOP

Agricultural Extension/Education
University of the South Pacific, School of Agriculture
Apia, Western Samoa

Background

In recent years, agricultural research has turned from a concentration on technology improvement (i.e., taro varieties, soils analysis, quick-growing hybrids) to include a concern for the socio-economic context of the study (i.e., the people who will use or benefit from the technology). This reflects an holistic approach--that technology does not exist in a vacuum but is part of a specific operational system and also the realization that unless technology is utilized, it is wasted technology. Hence, the re-emergence of the realization of the vital role of extension education in the agricultural research paradigm.

That the socio-economic perspective should be an integral part of agricultural research has been widely acknowledged, and new data collection techniques have evolved to achieve this based on the principles of participatory theory such as farming systems research and rapid rural appraisal strategies.

The socio-economic perspective has not been well integrated in much of our agricultural research. There may be many reasons for this, and I suggest only a few .

First, many researchers and administrators are not convinced of the worth of the social component, largely, I suspect, because this deals in uncomfortable uncountables (i.e., attitudes, motivational patterns, and possibilities). In the words of a Director of Agriculture I met recently, "Do we really need all that rural sociology?"

Second, there is a real lack of understanding of what a social-based study requires. As a result, many efforts to include people in research have focussed on refining data collection strategies--questioning techniques (how to write clear, unambiguous questions which will gain the information you want); data collection mechanics such as who do we question (head of household debates), who asks the questions (male/female, cultural sensitivity), the language of questioning, and where the questioning takes place (comfortable, non-threatening environment). Then, the development of new computer software packages has enabled us to analyze data and apply validity measures in a way many of us never dreamed possible. We are able to combine and recombine the vast quantities of countable information we collect in all sorts of ways to see what patterns emerge and what is significant.

Third, but just as limiting, many view the benefits of the social component mainly in terms of how this knowledge will ease the transfer of the new technology--"If we see what farmers are doing, we can see where we can inject our technology more easily"; and/or "We talked to the farmers. They've been included in our research decision making. That shows they accept our research." Those employing this perspective begin their research with their own research assumptions. Next, they talk to farmers and gather information about farmer practices, and they may incorporate the 'farmer wisdom' which fits in with their assumptions in the research. However, and this is the import point, although this information may cause them to alter their research processes, their research assumptions remain unchanged. They still follow, as it were, their own agenda.

I label this approach, "the spurious/superficial inclusion of farmers in our research." It misconstrues entirely both the process and the importance of the sociological approach. One part of 'farmer wisdom' does consist of an account of how farmers do things and why they do these in terms of soil erosion (i.e., pest control practices). However, the important part of 'farmer wisdom' is motivational patterns (i.e., farmers' hopes and dreams formed out of their beliefs and their knowledge of their own social realities). Farmer aspirations are a crucial ingredient in research assumptions and processes and, in fact, in deciding whether or not a particular piece of research should even be done. Their inclusion influences whether or not a technology is adopted, sustained, or rejected.

Talking to more farmers, sellers, and youth groups and recording farming practices is only touching the tip of what a social-based study means. If the questions we ask continue to be based on **our** assumptions of what farmers should be doing, then the data we collect and analyze so meticulously may be of little value.

Research Assumptions

Are we holding on to our own research assumptions, thus building new research on old assumptions?

The Old Assumptions

Much agricultural research is still dominated by economic growth assumptions of developing the crops/technology that promise large financial returns and/or increasing production per acre. As part of this attitude, it is assumed that growers will unthinkingly accept and practice any technology we offer which promises them a chance to increase production and accumulate. The major reason for talking to farmers, in this model, is to expedite the transfer of new technology, to help make it socially acceptable. The extension education program follows after the research. Often, if the technology is not adopted, we blame the farmers, put it down to farmer contrariness, laziness, or cultural factors. We turn the failure back to the farm unit. It is not our fault. This process is generalized in Fig. 1.

Fig. 1. Common situation

Research aim: Development and transfer of technology

Talking to farmers
- In order to understand
  - how we can efficiently inject the technology
- Tap farmer knowledge

Research assumptions remain unchanged

Transfer of technology
- By extension packages **after** the research

If not transferred
- Farmer contrariness (cultural factors?)
- Poor extension system

To base studies on erroneous assumptions is to invite failure. Farmers operate according to their own sets of assumptions. They are not passive acceptors of any technology but well informed and very careful decision makers (Fairbairn-Dunlop 1991, Hill 1986). Given their dependence on a fragile and often cavalier world market, farmers in the small island nation Pacific states have long practice at being good decision makers (Pacific Islands Monthly, September 1992).

One assumption which could be questioned, for example, is whether Samoan farmers want one super taro cultivar (cash returns) or would they prefer to farm a variety of cultivars (cash, exchanges, and food preference)?

Identifying New Research Assumptions

A sociological study requires that research be placed in its context--that research goals/parameters be determined in interaction with the potential users of the technology and not by the researchers alone.

> "Ideally, farming-systems studies are carried out with a view to introducing improvements on farmers' own land, **within goals as defined by the farmers themselves**" (Brookfield and Humphries 1992) (my emphasis).

A first step in contextualizing research is to identify the typical farming unit, how it operates, and the motivational factors and constraints which may influence its operation. A farmer's goals and aspiration may be influenced by many factors, including cultural ideology (individual accumulation or sharing of resources) and family resources (land, site, and labor). They may also be influenced by the farmer's knowledge of the realities of the local situation. The complexity of the local habitat raises distinctive management problems of which many farmers are already well aware (Brookfield and Humphries 1992).

In order to tap this information, we must use qualitative research strategies, such as participant observation, and adopt an open-ended questioning strategy which asks not only what are you doing but why are you doing that that way. This information should be continuously fed back into the research . This interaction enables a continuous evaluation of research assumptions and guides further decisions regarding what technology to develop (Fig. 2).

Fig. 2. Ideal situation

Aim: Understanding how the farming system works

Talking to farmers
- In order to understand
  - Goals and aspirations
  - Constraints (cultural, economic)
- Tap farmer knowledge

In order to generate relevant research foci/questions

Transfer of technology is facilitated because
- Research is what farmers want
- Transfer is taking place at each step of the research

The likelihood that technology transfer will take place is increased when the research proceeds according to user goals and needs; people use what they perceive to be useful to them. Further, because technology development and technology transfer are in a symbiotic relationship

and, ideally, proceed apace, there should be few communication barriers between developer and user. Transfer should be taking place at each step of the research, not just as a block at the end.

Basing New Research on Old Assumptions

There are many instances in the Pacific where viable technology has been rejected by its potential users. Goat rearing and bio-gas digesters are two examples, and pigeon pea is a third, which I shall discuss further.

Case One: Pigeon Pea. Through the 1980s, on-station and later on-farm trials in Samoa developed varieties of pigeon pea which grew well in the Pacific. The benefits of growing the crop were well publicized (i.e., a potential feed for livestock, as green manure, cover crops, windbreaks, control hedges in erosion control, temporary shade for cocoa and coffee, cropping rotations, and to augment the soil nitrogen status (Fernando and McDonnell 1983, Thomas and Leatio'o 1985)). The pulse's value for human consumption was expounded in nutrition workshops, and numerous cooking demonstrations and taste tests proved the popularity of patties, *dhal*, and other pigeon pea delicacies. In addition, an aid consultant secured guaranteed export markets for the crop. Despite these measures, pigeon pea has still not taken on in Samoa or in Tonga (Moengangango 1992, pers. comm.). Why not?

In terms of my argument, pigeon pea failed because the research was based on false assumptions. A closer examination of the farming context would have identified a number of factors which would have given a discerning researcher good reason to pause before investing too much capital in such a project. Factors such as:

(1) The endurance of customary ways featuring the exchange of traditional goods (would pigeon pea be acceptable in ceremonials and reciprocal exchanges?).

(2) Polynesian mores linking food and status. (amounts and kinds of taro/yams/meats indicate prestige, and breadfruit is a poor man's umu, while rice and pulses hold connotations of poverty because these foods were introduced to Samoa by Chinese-indentured plantation workers).

(3) Samoan cooking habits (a quick task placing vegetables and meats together in a pot to make a soup-like mixture, whereas the use of pulses requires a lengthy pounding of the peas; cocoa which requires the same preparation is widely accepted).

(4) Customary work habits (traditional staples require little maintenance once they have been planted).

Applying the Sociological Approach

Some of the ways a sociological approach differs from a quantitative research process have already been outlined. Typically, it involves a small sample, in-depth questioning (one to one interaction, i.e., participant observ-ation, informal interviewing) over a long period of time. Two examples featuring a sociological approach will be discussed. The first outlines how motivational patterns were identified in village studies and some of the implications these had on production and use behavior. **I propose that this information should be established before/or in the early days of our research.** The second is an example of taro research which incorporated a consideration for use motivational patterns.

Determining User Motivation

Over a 14-month period (1989-90), I undertook field work in three Samoan villages (total sample 150, Safotu 66, Siumu 54, Tanugamanono 30). The primary aim of the study was to examine women's work and education opportunities. However, as the women's role can only be understood by placing it within the family context (resources available and how these resources are used), the study focus was the family unit.

Three data collection methods were employed in the study. The major strategy was participant observation through the whole period. In addition, two more formal instruments were used: a census-like questionnaire of resources (to gather common data from all families, similar to the Rapid Rural Appraisal of the LISA project), and two sets of time allocation studies with subsamples from the three villages (total sample 50). The time-allocation studies involved 24-hour recall over a one-week period.

The following is a brief outline of some of the data collected in this study. First, the prevailing motivational systems are identified. This knowledge enables us to predict what factors will influence decisions regarding the production and use of goods. In this regard, Samoa has commonly been described as a semi-subsistence society. But apart from the definition that sometimes crops are sold and sometimes these are kept for family use, there has been little examination of what semi-subsistence means in terms of day-by-day decision making.

Motivational Systems

(i) A Dual System of Production and Use. The village studies confirmed the strong endurance of traditional ways in the three villages. The prime motivating force is to

preserve the family status (as symbolized in the chiefly titles) and village autonomy (the power of the village council of chiefs). The extended family unit is still the norm, and family members pool their labor and goods to support their family chief as he/she works to maintain the prestige of the family title.

Although it is clear that the *Faa Samoa* goals hold priority, families also want modern goods and services that cannot be produced by subsistence means (i.e., kerosene, nails, needles, seeds and tools, cloth, pencils, and paper), introduced goods which make life easier (i.e., rice, which is easily stored, and tinned fish, which requires no cooking), and luxury goods (i.e., soap, toothpaste, and sugar).

As a result of the desire for modern goods and the endurance of *Faa Samoa* ways, families observe a dual system of production and exchange--the monetized mode and the traditional reciprocity system. This requires a careful balancing of the needs and constraints of both systems and has a number of practical implications. In the first place, families need access to two kinds of goods--traditional and commodity goods. Further, family members must know the correct procedures involved in the customary exchanges, and because exchanges are perceived to be displays of personal bonds and relationships, family members must take the time to attend these events. While they are learning these skills, family members must also learn the skills needed for a job and/or how to successfully market crops.

(ii) Why Maintain Traditional Ways? The study revealed a commitment to maintain the *Faa Samoa* and that people are trying to incorporate the *Faa Samoa* within a development goal. Undoubtedly, this is because Samoans believe in the *Faa Samoa* system. It is their source of identity, gives meaning to their lives, and is a system over which they have some control.

However, given the reality of global market constraints and opportunities, maintaining the *Faa Samoa* also makes good sense. *Faa Samoa* reciprocity and sharing ensures that all people enjoy a basic standard of living. Samoans cannot put all their eggs in the capitalist basket because they have little control over global markets. It is in their interest to nurture and develop the family support systems. In effect, these represent the welfare systems of modern states, now themselves effectively crumbling.

Motivational Systems in Action: A Concept of Best

As a result of a dual system of production and exchange, a Samoan concept of best returns incorporates a concern for social as well as economic best. These decisions are usually situation specific, with an eye to what will bring the best returns at that time. In most cases, however, social returns take precedence over economic returns. For example, women stay home from paid employment to attend village meetings; families share large quantities of food which they could have sold for cash; and large sums of money are donated to village enterprises and celebrations which would make a real difference to individual families' standards of living. A clear idea of the values guiding production and use behavior is seen in these comments made during the study:

> "My father always says, 'You have to have pigs. It doesn't matter about anything else. If you have pigs and there's a *faalavelave* (time when help must be given to family/friends), then you always have something to take. That's what matters.
>
> "When I get 20 *tala*, I go straight down to the market and buy an *ie toga* (fine mat). I put it under my bed. You always have to have your *toga* ready ... if there's a *faalavelave*, what would you do? (If you had no *ie toga* available.) There would be shame. (This widow used to weave, but is 'too old now'.)"

It was found that crop production is also influenced by a consideration for the *Faa Samoa*: families continue to grow the crops used in prestations (taro, yam, and pigs) rather than those which might bring cash returns. For example, taro is considered by all families to be the most important crop to grow. It is the status food associated with ceremonies and hospitality, and no doubt because of this, taro is the preferred food. Second, taro is a reliable money earner. The demand for taro at the Apia markets is usually high, and there is a growing export market. As a cash crop, taro has the advantage over vegetables in that it can be kept in the ground for future use--it does not have to be sold immediately. Lastly, taro is considered by all families to be easy to grow. The level of technology employed is low, and little maintenance is needed once the *tiapula* have been planted. Taro cultivation is a skill all villagers feel they know.

These examples demonstrate the *Faa Samoa* motivational pattern in action in daily life. They underline the importance of maintaining the family's social reputation (as expressed in *Faa Samoa* terms) in spite of the economic hardships this might bring. This knowledge should be incorporated into research design implementation and evaluation.

Research Incorporating User Preferences

The most popular taro cultivar in Samoa is *Niue*, a pale whitish taro with little smell. And so in the aroid breeding

program at University of the South Pacific (USP), Institute for Research, Extension and Training (IRETA) (1980 onwards), a deliberate effort was made to develop a high-yielding cultivar which had the taste of *Niue*. 'Alafua Sunrise' (*Colocasia esculenta*) was the first cultivar developed and released in this program. It was evaluated for four years in on-station trials at USP and in a fifth year in two on-farm trials on Upolu, Western Samoa.

In these trials, 'Alafua Sunrise' consistently out-yielded *Niue*. ('Alafua Sunrise' yielded 8.6 t/ha compared to 4.6 t/ha for *Niue* and 11.4 t/ha compared to 3.5 t/ha for *Niue*.) In addition to this, the large vigorous headsets and suckers provided excellent planting material, and a ratoon crop could be harvested from suckers left in the soil after harvesting the main corm. Field observations also indicated that 'Alafua Sunrise' had fewer symptoms of dasheen mosaic virus than *Niue* but was similar to *Niue* in its reaction to *Pythium* root and corm rot (Wilson 1986). Shipments by commercial growers to American Samoa and Hawai'i proved the export marketing potential of the cultivar.

On the negative side, however, Samoans did not like the faint smell of the cultivar nor its color. Although the corm flesh is white with yellow fibers, on cooking, the corn goes a pal yellow (thus sunrise). When subjected to trials of eating quality by three panels of Samoans, 'Alafua Sunrise' rated 2.9 compared to 3.5 for taro *Niue* and 3.3 for *Manua* (1 poor, 4 excellent). Farmers indicated, however, that the less preferred yellow flesh and eating quality of 'Alafua Sunrise' are offset by the impressive yields.

At the conclusion of the trials, the intention was that the cultivar be multiplied for distribution through the Department of Agriculture to farmers in Western Samoa and pathogen tested tissue cultures be made available to other countries.

Further Research Generated

Currently, there are two projects developing from the initial 'Alafua Sunrise' research. The first is a program to establish a new cultivar which has no smell at all and no color (*Niue* Sunrise ?). In the second, a trial plot of taro *Niue* and 'Alafua Sunrise' is the subject of joint research. In this trial, crop production lecturers are evaluating growth physiology and plant pathologists are measuring the incidence of insect infestation. (In earlier months, *Niue* showed a lower aphid population, which gave rise to the theory that this was a further reason for the popularity of *Niue*. However, the latest counts reverse this finding.)

The Adoption of 'Alafua Sunrise' (1992)

There has been no proper evaluation of the project. However, it appears that the 'Alafua Sunrise' cultivar is not widely used in Samoa or the region. The transfer of the technology has taken place; however, this is only among a small group of farmers. The following may be some of the reasons for this state of affairs. Each tells us something about knowledge dissemination processes and needs.

1. Once the cultivar was proven, USP passed responsibility for its promotion by formal extension means to the local Department of Agriculture (USP financial constraints). The local Department of Agriculture itself has financial problems. There is a shortage of qualified personnel at all levels, equipment, etc. In these circumstances, publicizing the cultivar and backing this up with planting materials and supporting assistance are not a high priority with the Department.
2. The demand for information about the cultivar and planting materials is not being met. USP staff are constantly being asked about the new taro that's been developed at Alafua (Hazelman, pers. comm. 1991).
3. The many farmers using the cultivar are those farmers who participated in the on-farm trials, their families, and/or their friends.

This illustrates how farmer participation in trials is extension education and the importance of informal dissemination processes (farmer to farmer). However, also demonstrated is the fact that informal networks may not alone be sufficient to ensure a wider transfer of successful technology. There is still a need for a systematic, long-term extension program backed by planting materials and inputs as part of the research process. This, I understand, is where the LISA project is now--preparing farmer booklets and videos in order to promote the knowledge which has been accumulated.

Conclusion

It is not easy placing research into its socio-economic context. However, if technology is to be accepted, used, and passed on, it is essential that this is done at each level of the research process. This will require that we approach our research with an open mind, that we ask the right question, and focus our research according to the answers we gain. The information dissemination networks we establish as we interact with farmers will ensure that knowledge is exchanged. However, there must also be a concerted systematic extension program if a wider group of people are to benefit from research findings.

Acknowledgments

Thank you to Steve Rogers, Steve Hazelman, Fred Waiti (SOA), Siaosi Moenganganono (USP, IRD), and Jim Dunlop for ideas contributing to this report.

References Cited

Brookfield, H. & G. S. Humphreys. 1992. Mission to the Pacificland Network of IBSCRAM. p. 14. *In* Research School of Pacific Studies, ANU.

Fairbairn-Dunlop, P. 1991. E au le inailau a tamaitai: Women education and development, Western Samoa. Unpublished Ph. D., Macquarie University.

Fernando, L. H. & M. R. McDonnell. 1983. A comparison of five varieties of pigeon pea in Western Samo. Alafua Agricultural Bull. 8: (3).

Hill, P. 1986. Development Economics on Trial. Cambridge University Press.

Pacific Islands Monthly. 1992. Editorial. September.

Thomas, P. I. & K. Leatio'o. 1985. Pigeon pea (*Cajanus cajan*): A versatile recent introduction to Western Samoa. Alafua Agricultural Bull. 10(1).

Wilson, J. 1986. 'Alafua sunrise' taro AGDEX 171/31. USP School of Agriculture, Western Samoa.

The Editor

L. Ferentinos is the Project Coordinator of the Taro Production Systems Project at the University of Hawai'i at Manoa.

Jane C. Muench, an independent editor with J.C.M. Office Services, provided technical support.

Publication was supported in part by a grant from the USDA/CSRA Sustainable Agriculture Research and Education Program (formerly called L.I.S.A.). Additional support was provided by American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, Yap Institute of Natural Science, and the University of Hawai'i under the Agricultural Development in the American Pacific (ADAP) Project.

The Library of Congress has catalogued this serial publication as follows:

Research extension series / Hawaii Institute of Tropical Agriculture and Human Resources.—001—[Honolulu, Hawaii]: The Institute, [1980–
v. : ill. ; 22 cm.
Irregular.
Title from cover.
Separately catalogued and classified in LC before and including no. 044.
ISSN 0271-9916 = Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources.
1. Agriculture—Hawaii—Collected works. 2. Agriculture—Research—Hawaii—Collected works. I. Hawaii Institute of Tropical Agriculture and Human Resources. II. Title: Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources.
S52.5R47 630'.5—dc19 85-645281
AACR 2 MARC-S
Library of Congress [8506]